Home HEEKLY No. 72 SPECIAL July 24-31, 1984 45p SUPPLEMENT

More

MSX

Computing Read the latest news and start learning MSX BASIC

a weekend for two in Paris courtesyo

Software reviews for: Spectrum, **CBM 64**, BBC/Electron, Dragon, Oric/Atmos, TI-99/4A

ectrum oaram and hit them for six

TI-99/4A program See how you grow as you eat



Copied tapes seized judge told

Cassette copying equipment was seized in a raid on a doctor's home, a High Court judge was told.

Microdeal, the Cornish-based software company, had been granted a "search and seize" order at a private hearing.

It enabled the company to search the premises of Dr T. Mohamed in Blackburn and take away any offending copyright material.

Microdeal alleges that Dr. Mohamed and Mr T. Mohsan believed to be Dr Mohamed's 14-year-old brother - have been copying Dragon games such as Eight Ball, Katerpillar Attack, Scarfman and Space War.

Miss Mary Victoria, for Microdeal, told Mr Justice Mervyn Davies that the company had obtained "quite a lot of interesting material" when the order was executed.

She read a sworn statement Continued on page 5

School's over for Chris

A schoolboy is dropping his 'A' level course to invent computer games. Christopher Kerry, 17, of Batemoor, Sheffield, wrote the game Jack and the Beanstalk, currently high in the charts.

The game achieved top status and popularity even without advertising. And the company marketing the game, Liverpool's House of Thor, is now planning a massive promotion for it.

Now Christopher, who feared he would be joining the dole queue, may earn tens of thousands of pounds in royalties.

Christopher was studying physics, chemistry and computer studies at Jordanthorpe school. He left before the end of the summer term of his first year in the sixth form. Assistant head, Mr Heath said: "Christopher is a very capable young man with plenty of initiative. We wish him well!"

Christopher is now signed up

Continued on page 5



FLATHE GAME

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REGULARS

THE COMMENTS	
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This is your chance to win a once-in-a-lifetime trip - a weekend for two in Paris

Software charts

Find out what the new smash hits are in both arcade and non-arcade

PROGRAMS

48K Spectrum program

Here's your chance to be a world-famous star playing one-day cricket

Gobble up your food - the more you eat, the more you grow

SOFTWARE REVIEWS

Get out of this sticky situation

All-action arcade aces

Hot news! Test your arcade skill and experience

HOME COMPUTING WEEKLY BRITAIN'S BRIGHTEST



MSX COMPUTI

Here's the third issue of MSX Computing, presented to you free with Home Computing Weekly. This is what's in store for you:

- Insight into who's planning what when
- Start learning how to program MSX BASIC

Get ahead and stay ahead with Home Computing Weekly.

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Tapes

From front page

by the solicitor who carried out the order in which he said that Dr Mohamed had "readily admitted" copying Microdeal's tapes and that he had found recording equipment, blank tapes and tapes which had been

Nothing, however, had been found at the boy's home.

Neither Dr Mohamed or Mr Mohsan were present or represented in court.

But Miss Vitoria said Microdeal's solicitors had received a phone call from Dr Mohamed denying all knowledge of the matter.

The judge agreed to continue an order banning Dr Mohamed from infringing Microdeal's copyrights until a further hearing last Friday. He refused to make any order against Mr Mohsan.

Chris

From front page

as a freelance for Thor and he will receive royalties for Jack and the Beanstalk. His brother, Steven, helped with the graphics, an outstanding feature of the game.

Christopher came up with the idea of Jack and the Beanstalk because he thought people were getting fed up with space games and shoot-outs. Now he is going to think up some more new games.

Jack and the Beanstalk received a five-star rating when reviewed in Home Computing Weekly, "Frustrating but challenging; if you want a difficult action game this can certainly be recommended"; our reviewer wrote.

Headmaster Ken Cook says he is not worried about Christopher dropping 'A' levels and he is sure he will be a big success in computers.

No longer in the dark

Broadway Electronics chose to herald its mushrooming expansion plans by sending mushrooms to numerous computer personalities. Halfpound punnets of fresh mushrooms were delivered to their desks following the opening of new high tech headquarters in Bedford in March. Plans have been kept in the dark while new marketing strategies were formed.

Mushroom Computers becomes the parent company, responsible for marketing and manufacturing BBC/Electron add-ons. Broadway Electronics becomes a subsidiary and continues as Mushroom's retail arm. Mushroom Software and Mushroom Electronics are two other subsidiaries.

Paul Vaughan, managing director, said: "While continuing to manufacture peripherals for Acorn, we will develop independent products to an increasing degree."

Broadway Electronics, Aston Rd. Bedford, Beds MK42 OLJ

PSS track success

Kevin Bowes, the motorcyclist sponsored by PSS, is having a successful season. He is currently lying fifth in the Marlboro Clubman's Championship. This is only his second season, yet he has completed over 30 races.

Kevin is a 23-year-old Coventry printer, who took up racing motor bikes as a hobby. His progress against local rivals was quick, and PSS decided to back him in is career on the track.

Kevin has qualified for the Marlboro Clubman's Championships at Silverstone on September 22 and 23. PSS, 452 Stoney Stanton Rd.

Coventry CV6 5DG

Run for fun

The third annual Cambridge festival half-marathon, sponsored by Sinclair Research, has attracted a record 2,599 entries, including British Olympic marathan hope, Joyce Smith.

The half-marathon will take place on Sunday 15 July. Leading Sinclair staff have been persuaded to take part and Sir Clive and managing director Nigel Searle plan to jog along with the rest.

The fun run starts at 8.30 a.m. and the course is from Parkers Piece, Cambridge, through Fen Causeway, Grant-

chester and Trumpington. If you would like to participate, call Eddie Sharp at Cambridge City Council on 0223 358977.

Stop those headaches

Do you see spots before your eves or feel a pounding in your ears after spending hours in front of your trusty micro? If so, you could be suffering from vision disorders or headaches, known to be problems faced by TV computer users.

You may find relief from Reading, Berks

your ailments if you invest in an anti-glare filter, available from Romag. CEAF is a laminated filter combined with a diffused etched face which dissipates unwanted reflections. CEAF fits the curvature of the screen and is fixed on by veicro.

CEAF will retail for under £20 and should be in stock at your major high street computer dealer.

Romag, Patterson St. Blaydon on Tyne, Tyne and Wear NE21

Scary monsters

Just out on the Commodore 64: Bonzo, from Audiogenic. Audiogenic says that Bonzo features brilliant full-screen graphics and "some of the most devious and vicious monsters ever devised?"

You're a workman who must collect boxes from different levels of the screen. You must climb up and down ladders, avoiding monsters who are guarding the boxes. The monsters react intelligently and try to trap you on a particular level. Price: £5.95.

Audiogenic, B PO Box 88,

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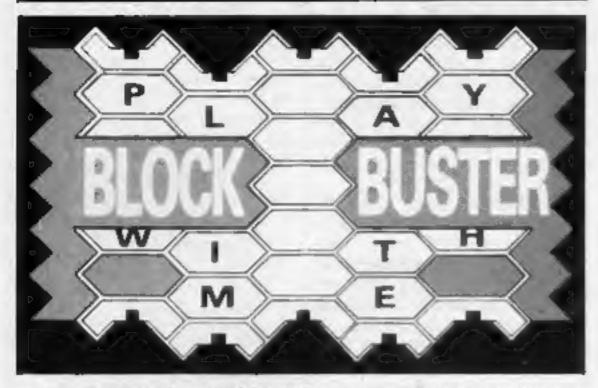
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LAWTON _IMITED



Our top prize in this week's competition is a weekend for two in Paris. Paris is an exciting city; the Parisians are stylish and elegant and enjoy the French tradition of drinking at roadside cafes and watching the world go by. You'll soon get into the swing of it.

Stroll along the Champs Elysées, climb the Eiffel Tower and take a boat ride down the Seine. Wander round the Galeries Lafayettes and spend an hour or so in the Louvre. While Paris is rich in cultural heritage, it's also up to the minute in fashion and design.

There's so much to do in Paris that a weekend can only give you the taste of this city at the heart of France. The cuisine is justly world famous and wine is cheap. And now you have the chance of visiting Paris — at Option's expense.

The top prizewinner of this week's competition will be flown out to Paris, coursesy of Options, and will stay in a hotel at Option's expense together with his or her companion. This is an ideal opportunity to enjoy an off-season weekend break in the French capital.

Fifty additional prizewinners will receive one of Option's range of educational software, which runs on the BBC and Commodore 64. In the shops each tape costs £8.95 (£9.95 for disc) so the prizes are worth £500.

All you have to do is suggest three applications for adult software. Options is planning to release non-technical software for Mums and Dads and wants you to send in your brainwaves on what would keep them fascinated.

Options is currently preparing a birthday book package, in which the user can retain all necessary dates, as well as a gardening program. What can you think of?

Options' educational software also involves parents. Each program has the facility for addition of data and questions. For example, after the demo program has been run, an adult could type in

questions which are relevant to the child's school syllabus. That's one way of involving both parents and children.

Options is a new company formed in June 1984. Options wants to encourage adults to use home computers. David Collins, manager, said: "in 99 out of 100 cases Mum and Dad bought a computer for their child and hoped it would provide help with homework. Our educational packages are ideal for that."

He continued: "What we want now is to provide software for their own use. There's really nothing on the market at the moment for adult leisure. There's only games and technical packages like spreadsheets."

So put on your thinking caps and send us three original ideas — and you could find yourself on that plane winging its way to Paris!

How to enter

Write on the coupon, in order of importance, three original ideas for adult software. Explain clearly and concisely your reasons why each program would interest adults. Your ideas should be non-technical programs for adults with little or no knowledge of computing. Please do not include the names of any arcade or non-arcade games.

Complete the sentence "I'd like to go to Paris because..." in not more than 20 words. This will be used as a tie-breaker, in the event of more than one person being eligible for the top prize.

Write in your name and address and computer (Commodore or BBC). Complete the coupon clearly and fully — it will be used as a label if you are a prizewinner. Please include your age: if you are a top prizewinner and are under 18 you will need to be accompanied by an adult companion.

Send the coupon to Options Competition, Home Computing Weekly, No. 1 Golden Square, London W1R 3AB. Entries close at first post on Friday August 10, 1984.

Paris courtesy of Options. And we're also giving away 50 tapes from Options

You may enter as many times as you wish, but each entry must be on an official coupon — not a copy — and sealed in a separate envelope. Important: please follow carefully the guidelines on entering — incomplete coupons cannot be considered.

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Entries will not be accepted from employees of Argus Specialist Publications, Options and Alabaster Passmore & Sons. This restriction also applies to employees' families and agents of the companies. The How to Enter section forms part of the rules.

Options Competition

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10 PAPER 4: BURDER 4: RANDOMIZE 0
  20 GD SUB 1409: GD SUB 1040
  22 GD TO 30
 29 CLS : BORDER 4: GO SUB 1390
 30 PAPER 7: 60 SUB 1580
 31 GO SUB 2000
 40 DIM v(11): LET 1=0
 45 LET bw=INT (RND*5)+1
 50 LET 1w=0
 40 LET wkt=0: LET tot=0: LET ov=0: LET pl=0: LET no=1
 70 LET bal=0: PRINT AT 10,15; ov: PRINT INVERSE 1; AT bw+5,27; "Q": PRINT AT 18
5;hi
 80 LET V=0
 90 LET v=INT (RND+270)+1+(p1/30)+(bw-3)+(2-INT (no/2))
 91 IF v<1 THEN LET v=1
 92 IF v>270 THEN LET v=270
 100 PAUSE 0
 110 IF INKEY$<>"1" AND INKEY$<>"2" AND INKEY$<>"3" AND INKEY$<>"r" AND INKEY$<>
"R" THEN GO TO 100
 120 IF INKEY$="1" THEN GO TO 160
                         GO TO 220
 130 IF INKEY$="2" THEN
 140 IF INKEY$="3" THEN
                        GO TO 290
 150 IF INKEY = "r" OR INKEY = "R" THEN GO TO 350
 140 IF v>=1 AND v<=5 THEN GO TO 510
 170 IF v>=6 AND v<=132 THEN GO TO 500
 180 IF v>=133 AND v<=232 THEN
                                GD TD 520
190 IF v>=233 AND v<=266 THEN GO TO 530
200 IF v>=267 AND v<=268 THEN GO TO 540
210 IF v>=269 AND v<=270 THEN GO TO 550
```

Will you be d cricketing You stand nervously at the At the end of the innings the

over the crowd...

That's how One Day Cricket, for the 48K Spectrum, begins. Your challenge is to get the best high score or beat a random high score.

The program holds Essex and England teams and choice is made depending on whether you select 40 or 50 overs.

These may be changed by altering the following lines (where x\$ is Essex/England and (S is the opposition):

802 & 812 venue (county/ 809 & 819 data (county/ international)

2002 & 2501 data (county/ international)

2004 & 2503 x\$ Essex/England

The opposition is randomly chosen for cosmetic purposes and does not affect the outcome of the game.

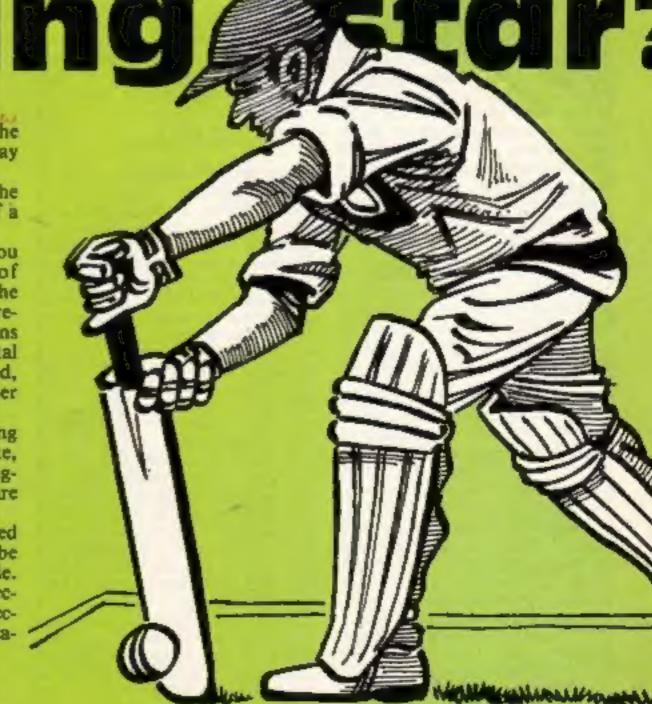
crease as an expectant hush falls scoreboard and score card may be copied on the ZX Printer.

> Spectators on each side of the scoreboard raise their arms if a six is hit or a wicket falls.

> At the end of each over you are given the option of obtaining the run rate and the required run rate. The scoreboard keeps track of total runs scored, batsman's runs, total when wicket fell, overs bowled, wickets fallen and bowler number bowling.

You play the game using three keys: 1 defensive stroke, 2 attacking/solid stroke, 3 aggressive stroke. Full details are in the program.

Capitals which are underlined are UDGs and should be entered in GRAPHICS mode. They are: A-M wicket, N spectators, O arms aloft, P spectators with arms aloft, Q indicator for bowlers.



M PROGRAM

```
220 IF v>=1 AND v<=15 THEN
                             GO TO 510
 230 IF v>=16 AND v<=146 THEN
                               GO TO 500
 240 IF v>=147 AND v<=201 THEN
                                GO TO 520
 250 IF v>=202 AND v<=231 THEN
                                GO TO 530
 260 IF v>=232 AND v<=234 THEN
                                60 TO 540
                                GO TO 550
270 IF v>=235 AND v<=269 THEN
 280 IF v=270 THEN
                    GD TD 560
290 IF v>=1 AND v<=45 THEN
                             GO TO 510
300 IF v>=46 AND v<=123 THEN
                               GD TO 500
310 IF v>=124 AND v<=181 THEN
                                GO TO 520
320 IF v>=182 AND v<=201 THEN
                                GO TO 530
                                GO TO 540
325 IF v>=202 AND v<=205 THEN
                                60 TO 550
330 IF v>=206 AND v<=230 THEN
340 IF v>=231 AND v<=270 THEN
                                GO TO 560
350 IF DV=0 THEN
                   GO TO 100
360 IF bal>0 THEN GO TO 100
370 LET r=tot/ov: LET r$=STR$ r: PRINT AT 21,1; "Run Rate "
380 IF LEN r$<3 THEN
                      PRINT AT 21,11;r$+".0": 60 TO 410
                       PRINT AT 21,11:r$: 60 TO 410
390 IF LEN r = 3 THEN
 400 IF LEN r$>3 THEN PRINT AT 21,11:r$( TO 4): GO TO 410
 410 IF tot>=hi THEN GO TO 490
 420 LET q=hi-tot+1
425 IF avs=50 THEN 60 TO 435
430 LET p=40-ov: LET t=q/p: 60 TO 440
435 LET p=50-ov: LET t=q/p
440 LET t#=STR# t: PRINT AT 21.17: "Regd.R/R "
 450 IF LEN t#<3 THEN PRINT AT 21,27;t#+".0": GO TO 480
 460 IF LEN t#=3 THEN PRINT AT 21,27; t#: 60 TO 480
 470 IF LEN t$>3 THEN PRINT AT 21,27;t$( TO 4): GO TO 480
480 PAUSE 0
481 IF INKEY$<>"r" AND INKEY$<>"R" THEN
                                          GO TO 480
          INK 4; AT 21,0; "
DΩ
```



Variables

V(1) scores for player on scoreboard

wariable for player, no score by current bowler's number

lw score at which last wicket fell wht number of wickets fallen tot total runs at current time

ov overs elapsed

no current player's score no current batman's number

but ball number of current over V random number plus formula r run rate (total -- over)

a high total (for required run

p 40-over (for required run

ovs number of overs chosen (40

rate)

• 9 ÷ p (for require run rate)

z (bal*4+1) position for display be initial total to aim for

(updated if chosen)
re tor-hi, rs hi tot. For "won by
runs" on scoreboard

sk skill factor chosen

rs STRSS r

ts STRS 1

c5 keyboard response (copy board)

es date

w\$ players' names

x\$ home team

fs away team

keyboard responses:

ss another innings

g\$ copy card

ys same match details

q\$ instructions

bs instructions again

IS details correct

Choose a county match or face some of the best international teams in One Day Cricket, a Spectrum game by R. Butcher

How It works

40-92 set variables

110-150 check keyboard for

160-340 result for that particular

350-360 stops run rate/required run rate midway through over 370-400 works out/prints run

410 checks total behind so run rate may be printed

420-470 work out/print required run rate

480-493 reprints over required run rate and run rate, returns to game

\$00-560 add wickets/runs to total/player's score

570-630 print result of ball at appropriate position 640-670 increment variables

690-720 print new data, updated if necessary after each ball 730 checks if wickets equal 10

for end of game 740 checks if more balls to over, if so returns to game

750-751 check if BAL=1, If so "end of over;" deletes dis-

752-760 check if end of over has been reached, if not return to

770 "end of innings" printed.
Asks if copy wanted

930-958 card copy option, match details option

970 end screen 1000-1030 if wicket falls specia-

tors raise arms
1040-1260 title screen

1290-1370 instructions 1390-1408 input details

1390-1408 input de 1409-1565 UDGs

1580-1720 set up screen display 2000-2002 if overs equal 40 picks

2500 if overs equal 50 picks national team

2502-2552 screen displays

```
490 PRINT INK 4; AT 21, 17; " | 1
 491 PAUSE O
 492 IF INKEY$<>"r" AND INKEY$<>"R" THEN GO TO 491
 493 PRINT INK 4; AT 21,1; "
                                       ": GO TO 100
 500 LET tot=tot+0: GO SUB 980: GO TO 570
 510 LET wkt=wkt+1: GO SUB 660: GO SUB 1000: LET pl=0: LET ng=ng+1: GO SUB 980:
GO TO 580
 520 LET tot=tot+1: LET pl=pl+1: 60 SUB 980: 60 TO 590
 530 LET tot=tot+2: LET pl=pl+2: GO SUB 980: GO TO 600
 540 LET tot=tot+3: LET p1=p1+3: GO SUB 980: GO TO 610
 550 LET tot=tot+4: LET pl=pl+4: GO SUB 980: GO TO 620
 560 LET tot=tot+6: LET pl=pl+6: GO SUB 980: GO TO 630
 570 GO SUB 640: PRINT BRIGHT 1; INK 2; AT 12, z; " | "; AT 13, z; " | | "; AT 14, z; " |
";AT 15,z;" - ": 60 TO 690
 580 GD SUB 640: PRINT BRIGHT 1; AT 12, z; "BD "; AT 13, z; "BD "; AT 14, z; "BD "; AT
,z;"@@ ": PAUSE 15: BEEP .01,0: PRINT BRIGHT 1;AT 12,z;"EEU";AT 13,z;"@@K";A
T 1
4.2;"윤도교";AT 15.2:"윤변표": GD SUB 1030: GD TO 690
 590 GD SUB 640: PRINT BRIGHT 1; INK 4; AT 12, z;" = "; AT 13, z;" | "; AT 14, z;" |
":AT 15,z;" " GO TO 690
600 GO SUB 640: PRINT BRIGHT 1; INK 3; AT 12, z; " - "; AT 13, z; " - "; AT 14, z; " ]
";AT 15,z;" " "; GO TO 690
610 GO SUB 640: PRINT BRIGHT 1; INK 5; AT 12, Z; " AT 13, Z; " AT 14, Z; "
": AT 15,2:" - ": GO TO 690
620 GD SUB 640: PRINT BRIGHT 1; INK 6; AT 12, z; " . "; AT 13, z; " . "; AT 14, z; " .
":AT 15.21" " ": GO TO 690
630 GO SUB 640: PRINT BRIGHT 1; INK 1; AT 12, z; " ... "; AT 13, z; " ... "; AT 14, z; " ...
"; AT 15,z;" " ": GO SUB 1020: GO TO 690
640 LET z=(bal*4+1)
450 RETURN
660 LET 1=1+1
670 LET v(1)=p1
6BO RETURN
690 PRINT AT 6,14; tot
700 PRINT AT 8,15; zwkt
710 PRINT AT 5,22;no
720 PRINT AT 7,21;pl
730 IF wkt=10 THEN GO TO 770
740 IF bal<6 THEN GO TO 80
750 IF bal=6 THEN PRINT FLASH 1; AT 21,0; "END OF OVER": PAUSE 50: PRINT INK 4
AT 21,0;" FOR a=5 TO 25 STEP 4: FOR b=12 TO 15: PRINT AT b.a:"
: NEXT b: NEXT a: LET bal=0: LET ov=ov+1
751 LET bw=bw+1: PRINT INVERSE 1:AT bw+4.27:" ": IF bw=6 THEN LET bw=1
752 IF av<40 THEN GO TO 70
760 IF ov=40 AND ovs=40 THEN PRINT AT 10,15; "40": LET 1=1+1: LET v(1)=p1: 60 T
0 770
761 IF ov<50 AND ovs=50 THEN GO TO 70
762 IF ov=50 AND ovs=50 THEN PRINT AT 10,15; "50": LET 1=1+1: LET v(1)=p1
770 PRINT FLASH 1; AT 21,18; "END OF INNINGS": PAUSE 200: PRINT INK 4; AT 21,18;
780 INPUT "ZX printer copy (y/n)?";c$
790 IF c$="y" DR c$="Y" THEN GO SUB 2550: COPY : GO TO-780
791 IF c$<>"n" AND c$<>"N" THEN GO TO 780
800 IF avs=50 THEN 60 TO 811
801 CLS : PRINT ''''': FOR I=1 TO 11: PRINT TAB (20); V(1): NEXT 1
802 PRINT AT 1,3; "Chelmsford"; AT 1,18; e$
BO3 PRINT AT 2,14-LEN x$;x$;AT 2,15; "v";AT 2,17;f$: PRINT AT 5, INT 15-(LEN x$-1
)/2:x$
BO4 PRINT '
```

M PROGRAM

```
805 RESTORE 805: FOR a=1 TO 11
 804 READ WS
 BO7 PRINT TAB (6):w$
 BOS NEXT a
 809 DATA "G.Gooch", "B. Hardie", "K. McEwan", "K. Fletcher", "K. Pont", "S. Turner", "D. Pr
ingle"."D.East"."N.Phillip","N.Foster","J.Lever"
 B10 GO TO 890
 B11 CLS : PRINT ''''': FOR 1=1 TO 11: PRINT TAB (20):v(1): NEXT 1
 812 PRINT AT 1,3;"Lords";AT 1,18;e$
 B13 PRINT AT 2,14-LEN x$;x$;AT 2,15;"v";AT 2,17;f$: PRINT AT 5,INT 15-(LEN x$-1
)/2:x$
 814 PRINT '
 815 RESTORE 815: FOR a=1 TO 11
 816 READ W$
 817 PRINT TAB (6): w$
 818 NEXT a
 B19 DATA "G.Fowler". "C.Tavare". "D.Gower". "A.Lamb". "D.Randall". "I.Botham", "B. Tay
lor", "G. Dilley", "N. Cowans", "N. Foster", "R. Willis"
 890 PRINT AT 19.6; "TOTAL("; wkt; AT 19.14; "wkts)"; AT 19.20; tot
 900 PRINT AT 20,8;ov;AT 20,10;".";AT 20,11;bal;AT 20,13;"overs"
 901 LET restot-bis LET reshi-tot
 902 IF tot=hi THEN GO TO 910
 903 IF tot>hi THEN GO TO 911
 904 IF hi>tot THEN GO TO 912
 910 PRINT AT 4,10-LEN x$;x$;AT 4,11;"drew with ";AT 4,21;f$; GO TO 919
 911 PRINT AT 4,11-LEN x$;x$;AT 4,12;"won by ";rr;AT 4,23;"runs": GO TO 919
 912 PRINT AT 4,11-LEN fs;fs;AT 4,12; "won by ";rs;AT 4,23; "runs"
 919 PLOT 12,172: DRAW 230,0: DRAW 0,-169: DRAW -230,0: DRAW 0,169
 920 PLDT 159,31: DRAW 25,0
 921 IF tot>hi THEN LET hi=tot
 930 INPUT "ZX printer copy ?(y/n)";g$
 940 IF q$="y" OR q$="Y" THEN COPY : GO TO 930
 741 IF g$<>"n" AND g$<>"N" THEN GO TO 930
 950 INPUT "Do you want another innings?"; = $
 951 IF s$="y" DR s$="Y" THEN GO TO 955
 952 IF s$<>"n" AND s$<>"N" THEN GO TO 950
 953 GD TO 970
 955 INPUT "Same match details ?":y$
 956 IF y$="y" OR y$="Y" THEN BORDER 4: GO TO 30
 957 IF y$<>"n" AND y$<>"N" THEN GO TO 955
 958 GO TO 29
 970 CLS : BORDER 4: PRINT " ...CLOSE OF PLAY...": PRINT '"As the sun slow!
y sets over the wicket, we must bid farewell to another day's exciting cricket.
The teams, players and spectators will be here the same time tomorrow - will
                record runs total, or be bowled out for a record low ?. Will one
you set a new
                               time record over 40 or 50 overs?Who knows what m
of your batsmen score an all
                another game of..."
ay happen in
971 PRINT AT 15,8; "ONE DAY CRICKET"
 972 PAUSE 0
 980 LET bal mbal+1
 990 RETURN
1000 PRINT AT 18,22; tot: PRINT INVERSE 1; AT 7,21; "
1010 RETURN
1020 PRINT AT 16,0; "EREE"; AT 15,0; "REREE": PAUSE 35: PRINT AT 15,0; "
                                                                           ":AT 1
6.0
:"BBBB": RETURN
1030 PRINT AT 16,29; "PPP"; AT 15,29; "DDD": PAUSE 35: PRINT AT 15,29; "
                                                                           ": AT 16
,2
9: "NNU": RETURN
1040 CLS : PAPER 4: BORDER 4
1050 PLOT 15,159: DRAW 15,0: DRAW 0,-22: DRAW -15,0: DRAW 0,22
1060 PLOT 38,137: DRAW 0,22: DRAW 15,-22: DRAW 0,22
1070 PLOT 76,137: DRAW -15,0: DRAW 0,22: DRAW 15,0: PLOT 61,148: DRAW 15,0
1080 PLOT 96,137: DRAW 0,22: DRAW 8,0: DRAW 8,-11: DRAW -8,-11: DRAW -8,0
1090 PLOT 120,137: DRAW 8,22: DRAW 8,-22: PLOT 124,147: DRAW 8,0
1100 PLOT 151,137: DRAW 0,14: DRAW -8,8: PLOT 151,151: DRAW 8,8
1110 PLOT 31.88: DRAW -15.0: DRAW 0,22: DRAW 15.0
```

```
1120 PLOT 39,88: DRAW 0,22: DRAW 15,0: DRAW 0, 11: DRAW -15,0: DRAW 15,-11
1130 PLOT 67,88: DRAW 0,22
1140 PLOT 95,88: DRAW -15,0: DRAW 0,22: DRAW 15,0
1150 PLOT 103,88: DRAW 0,22: PLOT 119,88: DRAW -15,11: DRAW 15,11
1160 PLOT 143,88: DRAW -15,0: DRAW 0,22: DRAW 15,0: PLOT 143,99: DRAW -15,0
1170 PLDT 159,88: DRAW 0,22: PLOT 151,110: DRAW 15,0
1180 PLOT 223,144: DRAW 6,0: DRAW 0,-40: DRAW 7,0: DRAW ,-93: PLOT 216,11: DRAW
0,93: DRAW 7,0: DRAW 0,40: PLOT 216,11: DRAW 20,0,PI/2
1190 PLOT 224,144: DRAW 0,-40: PLOT 228,144: DRAW 0,-40: PLOT 226,87: DRAW 0,-62
: PLDT 220,95: DRAW 6,-8: PLDT 232,95: DRAW -6,-8
1200 PLOT 199,8: DRAW 0,80: DRAW -32,0: DRAW 0,-80: PLOT 183,8: DRAW 0,80
1210 CIRCLE 127,40,20: FLOT 127,20: DRAW 0,40: LET a=123: FOR b=20 TO 60 STEP 3:
 PLOT a,b: NEXT b: LET a=131: FOR b=20 TO 60 STEP 3: PLOT a,b: NEXT b
1220 PRINT AT 16,2; "by"; AT 18,2; "R. Butcher"
1230 PRINT AT 19.3: 1984"
1260 INPUT "Instructions ? (y/n)";a$
1270 IF a$="y" OR a$="Y" THEN GO TO 1290
1271 IF a$<>"n" AND a$<>"N" THEN GO TO 1260
1280 GO TO 1390
1290 INK 7: CLS : PRINT "INSTRUCTIONS FOR ONE DAY CRICKET": PRINT "
1300 PRINT "In this game you act for the side batting. One Day Cricket cons
ists of 40 overs(County) or 50 overs(International); ending either at the end of
            allotted overs or the loss of 10wickets, whichever the sooner. ": PRIN
T "The scoreboard keeps you informed of what is happening after every d
elivery.": PRINT "For a ball to be bowled press either the keys 1 2 OR 3.": PR
INT INVERSE 1; AT 19, 10; "PRESS ANY KEY"
1310 PAUSE O: CLS : PRINT "These keys also simulate the
                                                          batsmans stroke to th
           particular delivery. The keys represent as follows..."
at
1320 PRINT '"1 DEFENSIVE STROKE"
1330 PRINT "2 ATTACKING/SOLID STROKE"
1340 PRINT "3 AGGRESSIVE STROKE"
1350 PRINT '"By tactical use of these keys for each ball, you determine the out
come (NO-SCORE, RUNS SCORED, DUT).": PRINT "(e.g)Using the 1 key will not prod
uce as many runs as 2 OR 3 but there is less chance of being out.": PRINT
INVERSE 1; AT 19,10; "PRESS ANY KEY": PAUSE 0: CLS : PRINT "The following statisti
         also determined by the key chosen. (RUNS/OVER:RUNS/WICKET OVERS/
cs are
WICKET)."
1360 FRINT "Apart from these set ratios, alsotaken into account are...
atsmans No [1-10] (b) Bowlers No [1-5]
                                                           (c)Players current s
           For both (a)&(b) the best playershave the lowest No.
he bottom left corner of theScoreboard will be a team displayed at random,
along with their score that you are trying to beat. Before the first inningsthis
 score is determined by choosing a Skill FACTOR(1-5).": PRINT INVERSE 1; AT
19,10; "PRESS ANY KEY": PAUSE O: CLS
1361 PRINT "1 being the easiest. This score is then treated as a -hi score- bein
g updated with your hi totalif that is the case after every innings. After each i
anings you have the option of changing the MATCH DATA which will result in a new
w randomly chosen target independent of your hi-score."
1362 FRINT "By pressing the R key you are given your RUN RATE and the
IRED RUN RATE to beat the opponents total. This key will only operate at the
end of an over.Pressing R again will return you to the game.At the
of the innings you are offered the option of a COPY of both the SCOREBOARD
           SCORECARD ON THE ZX printer."
1370 INPUT "Instructions again ? (y/n)";b$
1380 IF 5$="y"OR 5$="Y" THEN GO TO 1290
1381 IF b$<>"n" AND b$<>"N" THEN GO TO 1370
1390 INK O: PAPER 7: CLS : PAPER 7: PRINT AT 0,10; "MATCH DATA": PLDT 75,175: DRA
W 0,-11: DRAW B9,0: DRAW 0,11
1391 INPUT "Date";e$
1392 IF LEN e$>12 THEN 60 TO 1391
1393 PRINT INVERSE 1; AT 3,3; "Date
                                    - ";e$
1394 INPUT "No of overs ";ovs
1375 IF mys<>40 AND mys<>50 THEN GO TO 1394
1396 PRINT INVERSE 1; AT 5,3; "Overs
1401 INPUT "Skill factor (1-5) ":sk
1402 IF sk<>1 AND sk<>2 AND sk<>3 AND sk<>4 AND sk<>5 THEN GO TO 1401
```

M PROGRAM

```
1403 PRINT INVERSE 1:AT 7.3; "Skill factor - ":sk
1404 LET hi = (4*ovs) + (sk*25) - INT (RND*20) + 1
1405 INPUT "Are the above correct": i$
1406 IF is="y" OR is="Y" THEN RETURN
1407 IF 1$<>"n" AND 1$<>"N" THEN GO TO 1405
1408 GO TO 1390
1409 RESTORE 1409: FOR f=USR "a" TO USR "q"+7: READ v: POKE f.x: NEXT f
1410 DATA 24,24,24,24,24,24,24
1420 DATA 0,0,0,0,31,31,24,24
1430 DATA 198,198,198,198,198,198,198
1440 DATA 0,0,0,0,254,254,198,198
1450 DATA 0,24,56,112,96,0,24,24
1460 DATA 0,0,0,0,0,0,192,192
1470 DATA 192,206,223,223,223,206,192,192
1480 DATA 192,192,193,193,195,195,199,199
1490 DATA 192,192,128,128,0,0,0,0
1500 DATA 12.12.24.24.48.48.96.96
1510 DATA 0,0,0,0,3,3,7,4
1520 DATA 192,192,192,192,192,192,192
1530 DATA 0,0,192,224,112,48,0,0
1540 DATA 24,36,36,60,66,129,129,129
1550 DATA 0,0,36,36,66,66,66,66
1560 DATA 153,165,165,60,66,129,129,129
1565 DATA 0,56,124,124,124,56,0,0
1570 RETURN
1580 CLS & PAPER 7: BORDER O
1590 FOR a=3 TO 14: PRINT INK 5; AT a,0; " 23: 10 NEXT a
1600 FOR a=3 TO 14: PRINT INK 5; AT a, 27; " NEXT a
1610 FOR b=0 TO 2: FOR a=0 TO 31: PRINT INK S; AT b, a; "媚": NEXT a: NEXT b
1620 FOR b=21 TO 20 STEP -1: FOR a=0 TO 31: PRINT INK 4; AT b, a; "M": NEXT a: NE
X
T b
1630 FOR a=4 TO 28: FOR b=3 TO 19: PRINT AT b,a:"時": NEXT b: NEXT a
1640 PRINT INVERSE 1; AT 4,13; "TOTAL"; AT 5,20; "No "
1641 PRINT INVERSE 1:AT 5,25: "Bwl"
1642 PRINT INVERSE 1; AT 6,26; "1"; AT 7,26; "2"; AT 8,26; "3"; AT 9,26; "4"; AT 10,26; "
5"
1650 PRINT INVERSE 1;AT 6,14;"
1660 PRINT INVERSE 1; AT 8,10; "WKTS"; AT 8,15; "
1670 PRINT INVERSE 1:AT 10,9; "UVERS"; AT 10,15; " "
1680 FOR A=5 TO 25 STEP 4: FOR B=12 TO 15: PRINT AT B,A;" ": NEXT b: NEXT a
1690 PRINT INVERSE 1; AT 17, 18; "LAST"
1700 PRINT INVERSE 1:AT 18.18: "WKT":AT 18.22: "
1710 FOR a=16 TO 19: PRINT AT a,0;"' ' !!!": NEXT a
1720 FOR a=16 TO 19: PRINT AT a,29;"
1730 RETURN
2000 IF bys=50 THEN GO TO 2500
2001 RESTORE 2001: FOR a=1 TO INT (RND+16)+1: READ f$: NEXT &
2002 DATA "Notts", "Sussex", "Somerset", "Middlesex", "Surrey", "Hampshire", "Leics", "
Kent", "Yorks", "Derbys", "Gloucs", "Glamorgan", "Northants", "Lancs", "Warwicks", "Worc
5"
2003 PRINT INVERSE 1:AT 17.5:f$
2004 LET x = "ESSEX": PRINT INVERSE 1:AT 6.5:x $
2005 RETURN
2500 RESTORE 2500: FOR a=1 TO INT (RND+6)+1: READ f$: NEXT a
2501 DATA "Australia", "India", "Pakistan", "Sri Lanka", "W. Indies", "N. Zealand"
2502 PRINT INVERSE 1:AT 17,5:f$
2503 LET x = "ENGLAND": PRINT INVERSE 1; AT 6,5; x $
2504 RETURN
2550 FOR a=3 TO 14: PRINT AT a,0;"
2551 FOR a=3 TO 14: PRINT AT a,29;" ": NEXT a
2552 FOR 6=0 TO 2: FOR a=0 TO 31: PRINT AT 6,a;" ": NEXT a: NEXT b
2553 RETURN
9999 SAVE "oneday" LINE 1
```

BRITAIN'S SOFTWARE by the ASP Market Research Group

ARCADE

1 Sabre Wulf

2 Beach Head

3 Loco

4 Psytron

5 Omega Race

6 Trashman

7 Oblivion

8 Son of Bladger

9 Trashman

10 Murch Mania

Ultimate

US Gold Alligata

Beyond

Commodore Oulcksliva

Bug-Byta

Alligata New

Generation

Mastertronic

Spectrum (-)

CBM (2)

CBM 64 (3)

Spectrum (5)

CBM 64 (4)

CBM 64 (7)

Spectrum (6)

CBM 64 (·)

CBM 64 (9)

Spectrum (10)

1 Mugsy

5 Flight Path 737

3 Lords of Midnight

4 Sphinx

Adventura

5 The Inferno 6 Mastermind

7 Valhalla

B The Fall of Rome APS

9 Oulzmaster

10 Solo Flight

Melbourne House

Anirog

Beyond

Acornsoft

R. Shepherd

Commodore

Legend

Commodore

US Gold

Spectrum (1) **CBM 64 (2)**

Spectrum (4)

BBC (3)

Spectrum (6) CBM 64 (5)

CBM 64 (7)

Spectrum (9)

CBM 64 (10) **CBM 64 (B)**

Compiled with the assistance of Britain's leading software distributors, including: Pinnacie, SDL, PCE, Websters, PCS and Software Centre.

SPECTRUM

1 Sabre Wulf 2 Jet Set Willy

3 Stop the Express 4 Match Point

EARK Atac 7 Scubs Dive

a Fighter Pilot

9 Night Gunner

10 Manic Miner

5 Mugsy

Sinclair (9) Sinclair (-) Melbourne Hse (-) Ultimate (-)

Software Prois (-)

Martech (-)

Withmate (1)

Digital Integrato [-] Software Projs (-)

Digital Integrato (4

COMMODORE 64

1 Marrie Miner

2 Beachhead

3 Solo Flight

ACOIOSSUS Chess

5 Chuckle Egg

6 Smooker 7 Superpipeliné

8 Megawarz

10 Revelation

9 Chinese Juggler

Software Prois (-) Centresoft (-) Centresoft (-)

CD5 (-)

ASFIR Visions (-)

Tasket (4)

Paramount I-1

Microsoft (-) Softex (-)

DRAGON 32

1 (kuzzard Balt

2 Cuthbert in Space Microdeal (-)

3 Hungry Horace

4 Bug Diver

5 Dragon Chess

6 Mr DIQ

7 Sprite Magic

8 Chuckre Egg

9 Transytvanian Twr R Shepherd (-) Ocean (-) 10 Hunchback

ABEH

Melbourne Hse (-) Mastertronic (-) Oasis Software (-) Microdeal (-)

Knight (-)

Microdeal (-)

Compiled by W. H. Smith and Websters. Figures in brackets are last week's positions.

MC-20

1 Computer War

2 Tank Commander

3 Charlot Race

4 Snooker

5 Flight 015 6 Garnes Designer

7 wizard and the

9 Duck Shoot

10 Tower of Evil

Princess. 8 Grandmaster Chess Audiogenic (-)

Creative Sparks (-) Creative Sparks (-)

Microantics (+) Visions (-) FerrantiCraig (·)

Catactic (-) Melbourne House (-)

Mastertronic (-) Creative Sparks (-)

10 Tree of Knowledge Acomsoft (-)

1 Aviator

7 JCB Diggér 3 Linkwood French

#Linkwood German 5 Chouts 6 Fortress

Valley

7 Snooker **BSnooker** 9 Twin Kingdom

Micropower (-) Pace (-) Acornsoft (-) Visions (-) Bug-Byte (-)

Acomsoft (-)

Acornsoft (-)

Acomsoft (-)

Acomsoft (-)

1 Krypton Ordeal

2 Black Crystal 3 Planet Raider 4 Walk the Plank

5 Sabotage 6 Space Raiders 7 Flight Simulation 8 Chess 1K

9 Reversi 10 City Patrol NOVUS (A) Carnell (9) Novus (B) Novus (5) Sinclair (10) Sinclair (-) Sindair (-)

Sinctair (-) Sinciair I-I Sincialr (-)

MSX computers are big news. Backed by some of the biggest names in electronics, the stylish new computers are due in the UK from Japan in September.

We give you the rundown on who's planning what for MSX

Yamaha's MSX micro, due here in November, will also be a musical instrument, with its own remote plano-style keyboard

The system will cost about £600 and will comprise Yamaha's CX5 computer with a built-in sound module and added keyboard.

Jerry Uwins, marketing manager for the company's UK arm, Kemble-Yamaha, said "With 48 preset sounds it can sound like a plano, trumpet, violin... any instrument you care to name

"Composing is going to be one particular feature

"One of the important points to stress is that the various squeaks and squawks that you get out of Commodore and Sinclair are not in the same league.

"The sound is very similar to our DX9 synthesiser, which is a proper, pedigree musical instrument using proper classical notation"

The MSX computer from Sony will probably be called the Hrt Bit.

Sony's new business manager, Mike Margolis, explained: "Until a week before we launched the Walkman we were in two minds about whether to use the name





"We thought: "Why call it a silly name like Walkman... it's indiculous." We thought long and hard about it. But it's now part of the language. It has a personality and it's part of a lifestyle.

"A lot of the thinking behind the computer was done by the same people who are behind the Waikman, so we would expect the same unique approach. The uniqueness of the name has been an advantage to the Walkman and it would be the same for the computer"

Sony's present range of products in the UK include his fi, audio, video, TV and broadcasting equipment for both TV and radio.

And Mr Margolis said the computer would be sold through dealers who are currently seiting Sony products

a . Companies

Your all of start mi

Answering criticisms that the MSX standard could delay computer development, he said: "The way we see home computers is that they have traditionally been developed by boffins, reviewed by boffins and bought by boffins.

"They are people who are interested in computers for their own sakes. We believe there are a lot of people who are interested in home entertainment, not only to do their own programming

"There is a large number of people who are afraid of buying home computers. They are not sure what to buy and they have a whole list of fears."

The only reason for innovation was to bring benefits to the consumer — which would continue to be done with MSX — but there was no point in putting the latest chip into a home computer to sort 10 megabytes of information more quickly

Speed of games was important, though. And the format allowed considerable sophistication, not only with discs and the CP/M business operating system to come, but also the possibility of a second processor — increasing speed by two to three times — within about three years.

he stressed, however, that the computers would always be upward-compatible. The companies making them were highly competitive and their only common ground was compatibility

Mr Margolis said Sony would be bringing out its own

Continued on page 3.

What MSX will mean MSX will cure the major headache for home computer users and dealers software for one micro won't generally work on another maker's range

Several Japanese companies have got together to bring out computers which all use the same BASIC and operating system. And European and American computer makers are think ing of doing the same

and peripherals will run on any computer using the same standard, designed by the U.S. company Microsoft MSX stands for Microsoft Extended

MSX computers are due in the shops in September from, among other companies, Hitachi, Teleton Sanyo, Mitsubishi, Sony, Toshiba, Canon and Yamaha

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Continued from page 1.

peripherals, like disc drive and joystick, but probably not a standard joystick.

He said: "We pride ourselves on being innovative"

Toshiba expects to have its computer in the shops in September/October. Product manager Chris Greet said "We're been shead of the field in Japan, so we will possibly be one of the first in the UK."

UK buyers had the advantage that they would be getting the second generation of MSX computers, advanced on what first went on sale in Japan.

Talking of computer development, he said that the problem with boffins and research staff was that they always wanted to wait for the next advance before bringing out a computer

He felt that in the beginning there may be some confusion in the minds of buyers about which MSX computer to choose. But this would be cleared up as each manufacturer advertised and promoted its additional features.

He said: "At the end of the day the machines are completely different. Some have cassettes built in, some have got built-in joysticks."

JVC's computer, made in the town of Ewai, 50 miles north of Tokyo, will also have 64K of RAM and cost will be about £250. The company also plans to offer a monitor, 3 ½ in disc drive and a data recorder.

JVC's assistant marketing manager, Stephen Michaelis, said his company was also thinking of introducing a 5 ¼ in drive because that format was quite popular.

be running training courses for dealers before the launch!"

There would also be training for service engineers at the same centres, as well as in Scotland and Ireland

Mr Michaeus said: "I don't see many problems on that side — video recorders are far more comptex and our dealer network can service them already. Computers are a piece of cake"

JVC, short for the Japan Victor Company, is the inventor of the VHS video recorder format — which now had a claimed 80 per cent of the market — and makes video recorders, TVs, hi-fi, including compact disc players, as well as other products, it employs 1,200 people worldwide.

Mr Michaelis expected JVC to export its computer to most of Europe, starting with France

He said: "At some stage you have to put something on the marketplace.

"The technology behind the MSX standard is not unique — it uses standard components. But we know the reliability and we know how to develop softwere for the computers.

"If you look at the problems other computer manufacturers are having you can see the advantages of existing technology, That isn't to say that our computers are absolutely fixed. There's a lot of things coming from Japan."

The general manager of Canon's systems division, Richard Kennedy, expected his company's computer to start arriving in October.

He was cautious, however, saying: "We are taking a very advised view of the market. We are very enthusiastic about the product and the market and we are trying very hard to get it right from the point of view of availability of software. From the past, we know that software can be a little late."

He expected Canon's 64K computer, costing about £250, to get a major marketing push in the spring of next year. By then, he said, it would be on sale in every major high street retailer.

He expected tremendous competition between the makers of MSX computers.

The objects of the MSX working party had been superb but "certain people" would now adopt the standard after the hard work had been done by the founders.

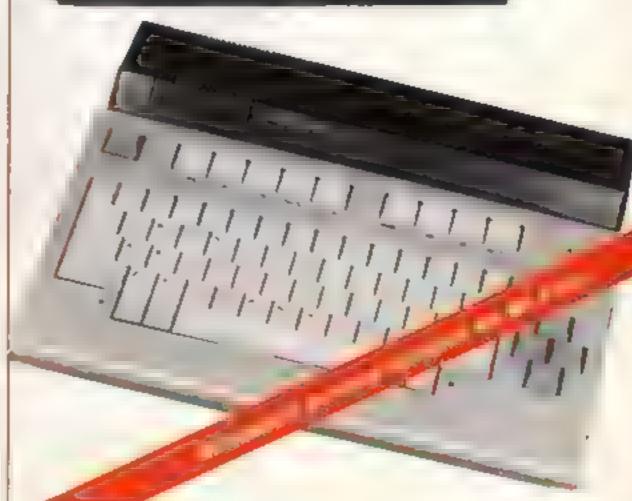
He said: "We are aiming at the audio and video dealer who we are already supplying.

"Some of the dealers, about 10 per cent, are already selling computers and they know a fair bit about them. We have two training centres, in London and in Leeds, and we'll

and Germany next year.

But supplies for the UK would at first be limited. He said: "It's very critical coming into the market in October. This year I don't think we will be able to meet demand because it's coming too late."





New Sorios

MSX computers have been on sale in Japan since October 1983 and we have been fortunate enough to have had MSX models at Aberdeen since that time. The purpose of this series of How to MSX articles is to assist readers in understanding all the features and complexities of the MSX range.

The MSX concept is a simple one - MSX seeks to set a standard for home computers. Manufacturers joining the MSX Group agree to make computers to the same technical and software specification.

As all MSX computers have the same cassette, joystick, cartridge and printer interfaces, software and peripherals made by, say, Tobisha, will run on a Sanyo or any other MSX micro.

The MSX concept has had the backing of at least 20 of the largest Japanese electronic corporations since 1983 and they have been joined this by European giants G.E.C. and Philips.

MSX has already taken a large slice of the Japanese home computer market. With the might of companies like Canon, Hitachi, JVC, Mitsubishi, Sanyo, Sony, and Toshiba combining to make computers to a single standard, there is no doubt that MSX will also take a substantial share of the European market

The manufacturers aim to

sell their micros as "family computers'.

As each MSX Group member also manufacturers home entertainment products it is no surprise that MSX micros can be interfaced with radio, TV, hi-fi and video equipment. JVC, the manufacturer which invented the VHS video system, has already shown its micro linked interactively with a video disc player. JVC and the other manufacturers see MSX as setting the standard for home computers, just as VHS sets the standard for video recorders.

Each MSX micro has an extended version of Microsoft Basic in ROM. Switching on a typical MSX micro boots the BASIC which is in a 32K ROM which occupies an area of memory from 0000H to 7FFFH.

The computer then finds the largest continuous block of memory from FFFFH down to 8000H and uses this for program and data storage. All MSX micros start up with white letters on a blue background. The following is displayed at the too left:

MSX BASIC version 1.0 Copyright by Microsoft 28815 Bytes free. Ok

The start up mode is SCREEN 0 (detailed later) and line 24 of the screen displays the words:

color auto goto list run

to remind users of the initial definitions of the five function keys. This line changes to show:

colour cload" cont list, run

Program 2 — shows all 256 characters

100 COLOR 15.4,4:SCREEN 1

110 FOR F%=0 TO 19

120 FOR J%±0 TO 13

130 IF F%*14+3%<256 THEN VPOKE 8H1842

+F%*32+3%*2,F%*14+3%

140 NEXT 3%, F%

when the shift key is pressed. Function keys 1 to 5 become F6 to F10 when pressed with the shift. This visual reminder of the key definitions can be switched off and on with the KEYOFF and KEYON commands.

All MSX micros have 16K of built-in video RAM which is separate from the main memory. There is no reduction in the amount of memory free when you are in highresolution or multi-colour modes. There are four screen modes which are specified by the first parameter of the SCREEN command

The 16 colours available are:

O transparent

1 black

2 medium green

3 light green

4 dark blue

5 light blue

8 medium red

9 light red

11 light yellow

14 previ

Program 1 displays bers of all the 16 colours on the highresolution screen. After a short delay, the computer returns to the text mode.

6 dark red 7 cyan

10 dark yellow

12 dark green 13 magenta

15 white

Program 1 — displays bars of all 16 colours

100 COLDR 15.1.1:SCREEN 2

110 OPEN "GRP: "AS 1

120 PRESET (35,5)

130 PRINT #1. "A CORRECTLY ADJUSTED SE

140 PRESET (35,15)

150 PRINT #1. "SHOWS 15 COLOURS & BLAC

160 CLDSE #1

TH

M M

170 FDR G%=2 TO 15

180 CDLOR 6%

190 LINE (G%*16-15,30)-(G%*16,184),,8

200 NEXT 6%

210 FOR D%=1 TO 12000:NEXT D%

Microsoft has obviously given a great deal of thought to the character set as it contains all the usual letters and figures plus many language, scientific, game and graphic shapes. The German umlauts, the French accents. circumflexes a the mathematical symbols will be especially popular with schools.

Program 2 displays all the 256 charactes on the screen.

SCREEN 0 is the first of the two text modes and gives a format of 24 lines each with up to 40 characters. All UK MSX micros default to 37 characters per line when switched on.

The WIDTH command selects the number of characters per line. It la possible to get the full 40 characters by entering WIDTH

All Japanese MSX micros default 'to 40 characters. Perhaps our Far East friends know that very few UK TV sets have a picture width control which can be adjusted by the customer and that many sets therefore "overscan"

Each character displayed in this mode is made up of 6 x 8 pixels. The built-in character set stores 8 x 8 pixels, but in this mode the right-most two columns of pixels are not

displayed. When the screen mode is changed to 0 or 1, the character set is copied from ROM (Read Only Memory) to RAM (Random Access Memory) so this makes it possible to re-define any of the 256 characters. This feature allows special characters to be displayed without going into high-resolution mode. Two of the sixteen colours can be used in this acreen 0 mode - one for foreground and one for background.

SCREEN 1 is the second of the text modes and gives a format of 24 lines each of up to 32 characters. Again the switch-on default width is less than the maximum possible the default for screen 1 is 29 characters per line. To get the full number of characters per line enter WIDTH 32, but on nearly all UK TVs the left-most character would be off the edge of the screen,

The MSX specification defines the use of two colours in SCREEN 1 mode. In later

Program 3 — demonstrates the speed of MSX computers |

100 COLOR 15,1,1:SCREEN 2

110 FOR F%=1 TO 100

120 LINE (RND(1)*250, RND(1)*190)-(RND

(1)*250,RND(1)*190),RND(1)*14+2,BF

130 NEXT F%

issues of MSX COMPUTING, we will describe a programming method which allows all 16 colours to be displayed

At present the character set is split up into 32 groups of eight characters and the foreground and background colours of each group are the same effectively giving a two colour display. Our method will show how to alter the foreground and background colour of all these 32 groups.

Remember it is also possible to redefine the shape of each character in screen 1 mode

SCREEN 2 is the highresolution mode which has 256 x 192 pixels definition. All 16 colours can be displayed at the same time.

The horizontal colour resolution is eight dots which means that in every group of eight adjacent horizontal dota, there can only be one foreground colour and one background colour. Any two of the 16 colours can be used for each group of 8 dots. The vertical colour resolution is one pixel, therefore any of the 16 colours can be placed next to each other vertically. There are many commands for creating hi-resolution patterns and they are all very flexible.

Program 3 demonstrates the speed of the computer and also shows all the colours. First hite computer is put into SCREEN 2 (hi-res mode) and then 100 boxes of random sizes and colours are displayed

There is a command which allows printing of normal text on the hi-res screen. As the text can be placed anywhere on the 256 x 192 gnd, this allows much greater control over where it is printed than in either of the text modes.

SCREEN 3 is the multicolour mode and has 64 x 48 resolution. Each of the 3072 pixels on the screen can be in any of the 16 colours.

When text is printed to this screen, all the pixels that make up the characters turn on one

0 8 x 8 unmagnified

1 8 x 8 magnified 2 16 x 16 unmagnified

3 16 x 16 magnified

The numbers refer to the number pixels make up the sprites e.g. a mode 2 sprite has 16 x 16 = 256 pixels. Magnified means that every pixel is the size of a square of four pixels,

Program 5 — a knight-shaped sprite bounces off the screen edges

100 COLOR 15, 1, 1: SCREEN 2,3

110 S\$= "": FOR F%=0 TO 31: READ A\$

120 5\$=5\$+CHR\$(VAL("8H"+A\$)):NEXT F%

130 SPRITE\$(0)=S\$

140 DATA 0,1,6,10,24,24,24,1F,4C,F7,F

Ø,18,7,2,3E,FE,18,8F,65,11,C9,A9,81,F

3,7F,9F,31,41,81,81,F9,FD

150 X%=128:Y%=96

160 XS%+1:YS%=1

170 PUT SPRITE 0, (X%, Y%), 13

180 X% X%+X5%: Y% = Y%+Y5%

190 IF X%<0 OR X%>210 THEN XS%=-XS%

200 IF Y%<0 OR Y%>156 THEN YS%=-YS%

210 GOTO 170

of the SCREEN 3 pixels which are equivalent to a square of sixteen SCREEN 2 mode pixels. Since the letters are made up of 8 x 8 dots, and the screen has 64 x 48 pixels, you can get 6 rows of eight characters in this mode. This is useful for trile pages etc.

Program 4 draws 200 lines at random positions on the acreen and shows the aize of the pixels in the SCREEN 3 mode.

MSX computers can display up to 32 sprites at the same time and can remember up to 256 'sprite patterns'. Sprites are characters whose shape, colour and position can easily be defined. They can be placed much more exactly than characters can and there are built-in collision detection routines. There are four sprite modes, these are specified by the second parameter of the SCREEN command

The four sprite modes are combinations of large or small sprites and magnified or unmagnified sprites. The modes are as follows:

so the sprites become four times their normal size.

When using a 8 x 8 size, the computer can store up to 256 sprite patterns. When using a 16 x 16 size, the computer can store up to 64 sprite patterns. Remember — only 32 sprites can be displayed at the one time

New Series NOUSE N

Program 5 shows a sprite in the shape of a knight bouncing off the edges of the screen. To stop the program press the CTRL and STOP keys at the same time

Try changing both the occurances of the number 1 in line 160 to 2 and note that the spirite moves faster.

Program 4 — draws 200 lines and shows SCREEN 3 pixel

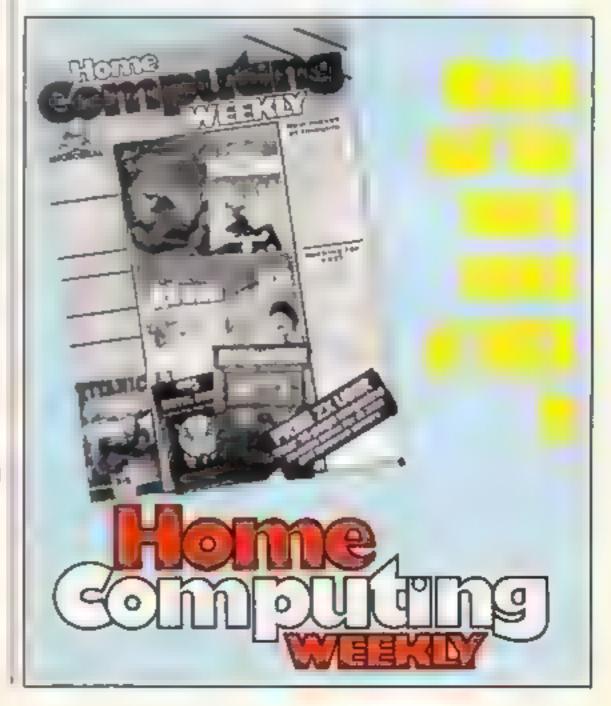
100 COLDR 15,1,1:SCREEN 3

110 FOR F%=1 to 200

120 LINE (RND(1)+256, RND(1)+192)-(RND

(1)*256,RND(1)*192),RND(1)*15+1

130 NEXT F%







DM MUMMY

Your party of archeologists enter the pyramid in search of the mummies of the pharoah's household. There are five burial chambers containing treasure, secret scrolls, keys, royal mummies and some nasty surprises. To pass from one chamber to the next, you must find the key and royal mummy, but beware, you may uncover a guardian, who will chase your group to avenge your desecration!!

A Machine Code game for those with nerves of steel and great courage.

Price (ZX81 & SPECTRUM) £4.95

DISCO DAM

Can poor Dan decontaminate the atomic fuel rods in time?! In this new 3D machine code game, you control Dan Dan The Atomiser Man, jumping him from disc to disc, trying to reduce the ever increasing radiation levels, in the atomic pile. However, Up'n'Atom'Arry and his gang of vagrant particles are thirsting for the energy in your back pack, which makes life a bit awkward at times. Then there's Ron the Rapacious Robot, not the sort to meet in a dark alley (or anywhere else for that matter)!!

Price (48K SPECTRUM) £4.95

All prices include postage and packing. All cassettes despatched within 48 hours of receipt of order.
Access orders welcome

DEALER ENQUIRIES WELCOME

GEM SOFTWARE, UNIT D, THE MALTINGS, STATION ROAD, SAW-BRIDGEWORTH, HERTS. Telephone (0279) 723567/723518.

Velnore Lair

Quicksilva, 13 Palmerston Rd, Southampion, Hants SO1 1LL

Quicksilva's first adventure game for the Oric is a classic alltext version, similar in layout to most others of its type. You choose the role of a warrior. priest or wizard in a quest to desiroy the evil Velnor Your journey will take you through dark caverns and passages where untold dangers lurk but vast treasures may also be found

If you like adventures then Velnor offers a good challenge. with logical thought and inspiration both playing their part. An option to save the game at any stage is provided which worked sa isfactority and is probably

essential if you do not have the pattence to solve the puzzle in

There is little assistance given and, by the nature of the game, this is correct. But perhaps some fundamental explanations of the very simplest moves and commands should have been supplied for the novice. The descriptions of your surroundings are quite realistic. If you are with children make sure they are not frightened by goblins, trolls or much worse nasties.

All in all, a fairly standard adventure without too many P 5 W

instructions	75%
playability	75%
graphics	N/A
value for money	80%

Star Force DOM: NO 32K BBC £9.99

Argus Press Software, No I Golden Sq. London WIR 3AB

Another in the Mind Games series. My major criticism of this program is that the information screens, while clear and unambiguous, are most uninspiring Even the major planet display is not very exciting

The game is, however, a fully implemented, war based, Strategy game and will appeal to those who enjoy a good long thoughtful battle amongst the ins stars. The a m is to destroy the home planet of the Zurgs or to capture, and keep, 25 of the other planets in the galaxy

You start by choosing like proportions of each type of fighting ship to commission for

the battle. Then you progress by three major stages, expressed as screens. The computer screen can give intelligence, energy status and fleet details whilst the navigational one allows star jumping, orbiting and attacking. If you are in orbit you may bombard, asault or retire. Notice that there is no chance of a friendly approach! In battle the screen is graphically much beiter as you watch the various ships being destroyed before your eyes. An interesting, yet nut too long-winded, game to be sure

tructions	55%
tyabinty	80%
phics	60%
lue for money	70%

Firelady plus Street Critis TI-BO AA ES

The first is quite long and takes some time to load. Judging by the awkwardness of the instructions it was written by a couple of youngsters and viewed in that light it is a very creditable. effort I don't know why the main character is a "fire lady". but due credit for including the, girls in the heroism charts

A block of flats is ablaze and you must climb 10 floors to save an old man. You can play against he comparer or another player the your movements are deter mined by dice. In fact, it's actually a revamped Snakes and l asiders — intelligently done, despite odd macabre moments If you land on a smaller fire you must guess how many galions of water are needed to extinguisher. and you've saved someone's life so you gain another throw; B skull and crossbones, and you'll need a '6', and of course there , are ladders

By the same authors, the second program, also long, is a bog standard Snakes and Ladders.

Both games make good, colourful use of graphics, and are aimed squarely at the: younger users. P.B

50% instructions playability 75% 85% graphics 859% value for money

Puzzles and adventures

Now get out of that! Our reviewers have tackled this software before, and this is what they think

A SHIP TALL A SHIP THE PARE

With a chance of winning [200 function can be used to swive] on completion of this game, the gates at random enthusiasm overwhelmed me-

with a screen full of complex the £200 will be well earned passages and angled gates. You are at the top clutching a barrel which you can roll left and right instructions or drop down. If you drop it, it playability falls down passages bouncing off graphics the gates at right angles, falling value for money into one of eight holes at the bottom. When the barrel drops on any gate it swivels to slant in the opposite direction

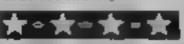
The object is to fill all nine holes with 20 barrels, which is not as easy as it sounds. If a barrel is accidentally dropped in a full hole all the barrels in that

hole are wiped out. At first the game seems easy, but when you Quicksilva, 13 Palmerston Rd, have only one hole left to fill you Southampton, Hants SOI ILL realise it isn't. If you're desperate the earthquake

After seeing the difficulty of On loading you are presented the fater stages I can safely say

> 8000 61100 6000 80%

м.в.



The Mystery of the Juvu Ster Electron £7.95

Shards, 189 Eton Rd, Rford, Essex IGI 2UO

If you like puzzles then this multi-faceted program may be just your cup of tea. To describe this as a program is far too mean, for the package comprises four individual, ver linked games of different types and

The first is called Bristol and involves the jigsaw type skills af piecing together a message In London you must wander around researching your information ready to go exploring, the arm here being to get just the information you need at minimum cost in time and money. In Jamaica you g looking for an island to maich vour research and can surve) those you find before landing to a charter a boat

Finally, you dive in your chosen location on the Seawitch! in the hope that you find the ultimate goal — the beautiful lava Star ruby and all the gold, that the wrecked ship carried in When you consider the cost of individual programs like this you can only conclude that this is exceptional value for money and unlike short action games, the work involved is likely to take a number of days if not weeks. Its claim to be educational is reason ably fair too. Well done Shards!

nstructions. playability graphics value for money

 $\phi() \phi_0$

90%

100%

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Act on beneath the pyramids! Fearless Fred the Intrepid Archaeologist, searches the creepy catacombs below the torrid tomb (Tootiecarmoon!

COMING SOON

GAMES 84 – Spectrum 48K

From the advanced programming project division of the SOFTWARE STUDIOS - GAMES 84, an Olympia spectacular!



Mined-Out 48K Oric/ Atmos £6.95

Quicks, va. PO Box 6, Wim- included for all us failures. boarne, Dorset BH21 7PY

A welcome change from space brain than brawn and one false diversion move can lead to disaster. You minefield over which you must carefully pick your way to reach the next level. The snag is that you cannot see the mines and you only have one chance. All is not lost, however, since you know if one, two or three mines he next to you and by getting the old grey matter working, it is possible to find a safe path.

As you progress, various complications arise but ultimate success is achieved when you reach level 8 and are permatted to rescue the famous star Bill the Worm. A near reply facility is

A clever game, simple to pick up, but requiring skill to master. For more thoughtful players it wars, Mined-Out requires more should provide some hours of

My only quibbles are that only are situated at the start of a a fast load version is available and the inlay card, although amusing, did not describe the game very accurately. P.S.W.

instructions	80%
playability	850%
graphics	804.
value for money	905,

Gatecrasher **48K Spectrum** £6.95

Quicksilva, PO Box 6, Warnbourne, Dorset BH21 7PY

No, it's not party time! You must drop barrels into a maze of tunnels, trying to get one barrel into each of the nine boxes at the base of the maze. However, the barrels look and sound like ball bearings'

If a barrel drops on to a gate it moves in the direction the gate is facing and Rips it over.

A box will empty if a second barrel falls into it — and you're himsed to only 20 barrels per level, so study the maze carefully! You are able to totate the maze up or down and there's an earthquake feature which randomly alters some of the carcs.

Levels five and six add a difficult twist. You must sort the barrels into numerical order. If a barrel drops into a box it swops places with its neighbour on the

The keys are user-definable making the barrel-dropping machine easy to control. It's interesting that the screen shot on the inlay is from a different version of the game.

Enjoyable, simple at first but becoming much more difficult.

70% instructions Q()P/e playability 70% graphics value for money



Ughi **48K Spectrum** E5.95

Softek, 12/13 Henrietta St. ondon WC2

The fee Age is coming so Ugh's got to stock up with food by itealing Ptery the Pterodactyl's aurus and Alison the allosaurus frop tones on Ugh.

As Ugh you must climb the hill to get the eggs. You have an unlimited amount of spears in your cave - but you can only rearry one at a time. When you pick up an egg you leave yourself defenceless. Your pursuers are stupid and would be easy to avoid if it wasn't so difficult to move - to get on to a different path you must press up or down with left or right and be in exactly the right position. The gracks are accurate so they're difficult to avoid

Graphics are excellent. Scord and lives teft are displayed on a tab et of stone, in keeping with the prehistoric scenario. The game starts with an excellent title screen and unbelievable sound. The keys can be redefined, or you can use a wide variety of joysticks

Unfortunatety, Lgh' s last ng appeal is questionable because the 'maze' is trny and there only appears to be one screen display S.E.

instructions playability graphics. value for money

名的现象 659 1004 75%

All-action arcade aces

These fun games are hot news. Test your arcade skill and experience against them

Encounter CBM 64 £9.95

Novagen

arcade-style game I have seen on next level. the CBM 64. It seems to be based on an arcade game which realy makes the game interesting involves shooting him drawn. Graphics are quite outstand-BARRE

tame in which you must locate movement. The explosions are and destroy flying saucers. The spectacular as debeis flies all over display is a 3D picture with radar before twinkling away. and scanners below. Cyclinders on the battlefield deflect shots instructions from both yourself and the playability enemy craft. Sometimes missiles graphics home in on you. If you don't value for money destroy them immediately they smash into your shields.

Once you have killed all your enemies on one level you may go through a gate to the next one. You are propelled through a

hadstorm. If you are hit by one of the spheres you are returned to the last level. If you get through you are awarded an This must be about the best extra shield and sent on to the

The sound is excellent and 🕖

ing. The 3D display is fast, Fricounter is a full colour smooth and flicker-free in its

60% gsm_e 9(Ba 90%



Horace Goes Skiing **Dragon 32**

Melbourne House, Church Yard, Tring, Herts HP23 5LU

Horace wants to go skiing - but the sky hut is on the other side of busy road. He must cross the road to get some skis then cross back to tackle the statom course

The first part, crossing the road, is rather like Frogger, and the second part bears some resemblance to a car race game. The teaffic is fast and furious, and you need a lot of pattened and skill to reach the ski slope.

The graphics are excellent, imong the best I've seen on the Dragon The traffic is very convincing, with slow moving formes and speedy life morarlikes as well as cars and tractors. The flags and fir trees in the second stage are simpler but still very effective. The sound is also good, and not over-done for

The game can be played using ... he keyboard, or, preferably, a loystick. There are a few minor faults - the demonstration mode described on the cassette inlay didn't appear to exist, and there is a fairly long delay before the game re-starts after you loss, a life on the road. Overall, though, it's a good, entertaining game

instructions 759% ROP/a piayabi ity 95% graphics 80% value for money



Now that summer's finally here, all the insects are out and about and making the most of the warmer weather. So are you in this game.

You are a caterpillar and you spend most of the lazy hazy days of summer eating leaves. Your particularly favourite patch is the mushroom patch.

Eating leaves makes you grow at a miraculous rate. You can almost see yourself expand — it's a good thing that doesn't happen in real life! You must avoid bumping into your own body or colliding with mushrooms, or you'll lose one of your three lives. Once all your lives have been used up, the game ends.

Another obstacle to beware is the hedge bordering the

How it works

10 go ahead to print instructions 15-60 first set of variables set-up 70 clear screen

80 set screen colour to black 90-110 set text to white

120-150 define colours 160-240 define characters 250-320 second set of variables

scl-up 330-360 hedge displayed 370-400 score printed

410-440 paich number printed 450-480 number of lives printed

490-610 mushrooms displayed 620-710 leaves displayed

720-730 display caterpillar 740 check caterpillar position

750 check keyboard 760-800 check for movement

810-1120 define new screen positions

1150-1160 check new screen **POSITIONS**

1170-1180 display caterpillar in new positions

1190-1220 check new screen positions

1230-1300 you've eaten a leaf 1310-1580 a patch is completed 1590-1650 you bumped into your own body

1660-1700 you hit a mushroom 1710-1800 you went into the

1810-1840 display number of remaining lives

1850-1930 have you run out of ives?

1940-2200 end of game 2210-2240 display score and screen messages

Watch Vourself expand as your stuars of the by Stuars

The more more you

mushroom patch. If you touch it the game ends.

Your first patch has 20 mushrooms and 10 leaves. Once you finish a patch, you move on to a new one with five more mushrooms and one more leaf. This makes each patch harder than the one before.

Control the caterpillar with the four cursor keys, keeping the alpha-lock button down. If you find the game too fast, stop the caterpillar moving by holding down any other key apart from the cursor keys.

Your score, patch number and number of lives are constantly displayed at the top of the screen You score 10 points for each leaf you eat, and whenever you complete a patch you get a bonus score. The bonus depends on which patch you've completed and how many of your lives are left.

At the beginning of the game simple instructions are displayed, but if you decide to play again at the end of a game, the instructions won't be repeated.

A STATE OF THE PARTY.

NOM number of mushrooms NOL number of leaves PAT patch number

LI number of lives

SC score Q detect position of caterpillar COT change text to white

J,F,A,B,O,P used to move caterpillar LEAF number of leaves eaten

CHAR shape of caterpillars 127 MS hold screen messages and

100 MD/MA positions of MS MUSH display required number of mushrooms

Y/X positions of leaves and mushrooms

WM1 check positions of mushrooms tops

WM2 check positions of mushrooms stalks

LEA display required number of leaves

WAL check positions of leaves NOCD clear screen

DELAY produce short delay NU change colour of cater pillar's body

V change volume of sound NUCD clear screen

SO change musical notes display screen messages 1 REM **************************

2 REM *CATERPILLAR CRAWL*

REM BY

4 REM STUART LENKER * 25TH APRIL 1984 REM

REM

REM * HIGH-SCORE 2870 REM BY JULIETTE

9 REM **************

10 GOSUB 2250

15 NOM=20

20 NOL=10

30 PAT=1

40 LI=3

50 SC=0

60 Q=32 70 CALL CLEAR

80 CALL SCREEN(2)

90 FOR COT=1 TO 8

100 CALL COLOR(COT, 16, 1)

110 NEXT COT

120 CALL COLOR(13,13,1)

130 CALL COLOR(14,16,1)

140 CALL COLOR(15,7,1)

150 CALL COLOR(16,11,1)

160 CALL CHAR(128,"AA55AA55AA55A

A55")

170 CALL CHAR(129, "081C3E7F7F3E0

808")

180 CALL CHAR(136, "18183C3C7E")

190 CALL CHAR(144,"008000183C7EF

FFF")

200 CALL CHAR(152, "3C7EFFFFFFFFF

E30")

210 CALL CHAR(153, "814224183C7E7

E30")

220 CALL CHAR(154, "3C7E7E3C18244

281")

230 CALL CHAR(155, "0162F4F8F8F46

201")

240 CALL CHAR(156, "80462F1F1F2F4

680")

250 J=0

260 F=1

270 A=4

280 B=2

290 0=1

you eat, the

arow.

300 P=0

310 LEAF=1

320 CHAR=154

330 CALL HCHAR(2,1,128,32)

340 CALL HCHAR(24,1,128,32)

350 CALL VCHAR(2,1,128,23)

360 CALL VCHAR(2,32,128,23)

370 M\$="SCDRE-"&STR\$(SC)

380 MD=1

390 MA=1

400 GDSUB 2210

410 MS="PATCH-"&STRS(PAT)

420 MD=1

430 M8=13

440 GOSUB 2210

450 MS="LIVES-"%STR\$(LI)

460 MD=1

470 MA=23

480 GDSUB 2210

490 FOR MUSH=1 TO NOM

500 RANDOMIZE

510 X=INT(31*RND)+1

520 IF X<3 THEN 510

530 Y=INT(22*RND)+1

540 IF Y=1 THEN 530

550 CALL GCHAR(Y,X,WM1)

560 IF WM1<>32 THEN 500

570 CALL GCHAR(Y+1,X,WM2)

580 IF WM2<>32 THEN 500

590 CALL HCHAR(Y,X,144)

600 CALL HCHAR(Y+1,X,136)

610 NEXT MUSH

620 FOR LEA=1 TO NOL

630 RANDOMIZE

640 X=[NT(31*RND)+1

650 IF XK3 THEN 640

660 Y=INT(23*RND)+1

670 IF Y=1 THEN 660

680 CALL GCHAR(Y,X,WAL)

690 IF WALK>32 THEN 630

700 CALL HCHAR(Y,X,129)

710 NEXT LEA

720 CALL HCHAR(A,B,CHAR)

730 CALL HCHAR(A-F,B-J,152)

740 IF Q<>32 THEN 1190

750 CALL KEY(0,X,Y)

760 IF Y=0 THEN 1130

770 IF X=83 THEN 810

780 IF X=68 THEN 890 790 IF X=69 THEN 970

800 IF X=88 THEN 1050 ELSE 720

810 B=B-1

820 F=0

830 J=-1

840 P=-1

850 D=0

860 CHAR=156

870 CALL GCHAR(A,B,Q)

880 GDTD 720

890 B=B+1

900 F=0

910 J=1

920 P=1

930 0=0

Hints on conversion

If you are going to try and convert this program to another machine, then remember the following points

I The Texas has n 24 by 32 graphic screen

2 It has a 24 by 28 text screen 3 It uses user-defined graphics

A good amount of space can be saved by using multiple line statements. Below are the more unusual commands.

CALL CHAR (ASCII code number, hexadecimal string) Defines characters used in the program. The hexadecimal string describes the pattern to be given to the character with ASCII code

CALL HCHAR (row number, column number, ASCII code, number of repetitions) Places character on screen at row and column specified, and repeats it horizontally the number of times stated. If this fourth value is omitted then the character is displayed only once. The character used is the one whose ASCII code appears in the command.

CALL VCHAR (row number, column number, ASCII code, number of repetitions) Works the same way as CALL HCHAR only repeats vertically instead of horizontally.

CALL GCHAR (row number, column number, numerical variable) Equivalent of PEFK; assigns ASCII code of character at row and column stated to numerical variable

CALL CLEAR Clears the screen. Equivalent to CLS.

CALL SCREEN (colour code) Specifies screen colour, using colour code.

CALL COLOUR (character set number, foreground colour code, background colour code) Specifies foreground and background colours for all characters in set stated.

CALL SOUND (duration, frequency, volume) Produces sound with duration, frequency, and volume specified. Duration is in milliseconds, frequency in Hertz and volume in scale from 0 (loudest) to 30 (quietest).

CALL KEY (key unit, k,s) Equivalent of INKEYS or GET. Returns code if key pressed in variable k

These are the 16 colours:

1 transparent

2 black

3 medium green

4 light green

5 dark blue

6 light blue

7 dark red

8 Cyan

9 medium red

10 light red

11 dark yellow 12 light yellow

13 dark green 14 magenta

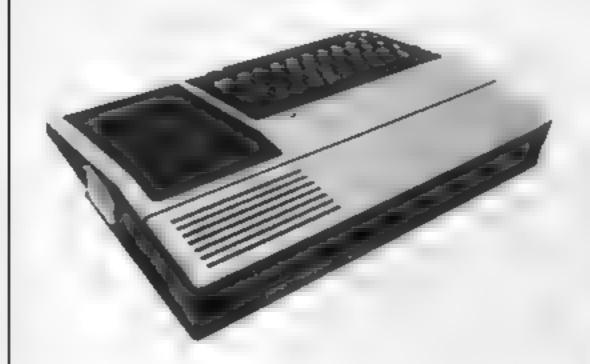
15 grey

16 white

```
1460 MA=10
940 CHAR=155
                                      1470 GDSUB 2210
950 CALL GCHAR(A,B,Q)
                                      1480 SC=SC+(PAT*LI*10)
960 GOTO 720
                                      1490 M$=STR$(SC)
970 A=A-1
                                      1500 MD=1
980 F=-1
                                      1510 MA=7
990 J≐0
                                      1520 GDSUB 2210
1000 P=0
                                      1530 PAT=PAT+1
1010 0=-1
                                      1540 NDL=9+PAT
1020 CHAR=153
                                      1550 NDM=NDM+5
1030 CALL GCHAR(A,B,Q)
                                      1560 FOR DELAY=1 TO 500
1040 GBTB 720
                                      11570 NEXT DELAY
1050 A=A+1
                                      11580 GaTo 70
1060 F=1
                                      1590 CALL SOUND(600,110,30,110,3
1070 J=0
                                      0,500,30,-8,0)
1080 P=0
                                      1600 FDR NU=1 TO 6
1090 □=1
                                      1610 CALL COLOR(16,7,1)
1100 CHAR=154
                                      1620 CALL COLOR(16,11,1)
1110 CALL GCHAR(A,B,Q)
                                       1630 NEXT NU
1120 GOTO 720
                                      1640 LI=LI-1
1130 B=B+P
                                      1650 GOTO 1810
1140 A=A+0
                                      1660 FOR V=0 TO 30 STEP 2
1150 CALL GCHAR(A, B,Q)
                                      1670 CALL SOUND(-99,-6,Y)
1160 IF Q<>32 THEN 1170 ELSE 720
                                       1680 NEXT V
1170 CALL HCHAR(A, B, CHAR)
                                      1690 LI=LI-1
1180 CALL HCHAR(A-F,B-J,152)
                                      |1700 GOTO 1810
1190 IF Q=129 THEN 1230
                                      11710 FOR V=30 TO 0 STEP -1
1200 IF Q=128 THEN 1710
                                      1720 CALL SOUND(-250,-2,V)
1210 IF Q=152 THEN 1590
                                      1730 NEXT V
1220 IF (Q=136)+(Q=144)THEN 1660
                                       1740 FOR V=0 TO 30
1230 CALL SOUND(99,-1,2,320,0,55
                                       1750 CALL SOUND(-500,-2,V)
0,3)
                                       1760 NEXT V
1240 SC=SC+10
                                       1770 FOR NUCD=3 TO 23
1250 LEAF=LEAF+1
                                      1780 CALL HCHAR(NUCD, 2, 32, 30)
1260 Q=32
                                       1790 NEXT NUCD
1270 MS=STR$(SC)
                                       1800 GOTO 2050
1280 MD=1
                                       1810 M$=STR$(LI)
1290 MA=7
                                       1820 MD=1
1300 GOSUB 2210
                                       1830 MA=29
1310 IF LEAF=NOL+1 THEN 1320 ELS
                                       1840 GDSUB 2210
E 720
                                       1850 IF LIK1 THEN 1940
1320 CALL SOUND(100,440,0,540,2)
                                       1860 □=0
1330 CALL SOUND(100,550,0,650,2)
                                       1870 P=0
1340 CALL SOUND(100,440,0,540,2)
                                       1880 Q=32
1350 CALL SOUND(100,660,0,760,2)
                                       1890 CALL HCHAR(A,B,CHAR)
1360 CALL SOUND(100,880,0,980,2)
                                       1900 CALL HCHAR(A-F,B-J,152)
1370 FOR NOCD=3 TO 23
                                       1910 CALL KEY(O,K,S)
1380 CALL HCHAR(NDCD, 2, 32, 30)
                                       1920 IF S=0 THEN 1910
1390 NEXT NOCD
                                       1930 GOTO 720
|1400 MS="WELL DONE-PATCH "&STR$(
                                       1940 FOR SO=150 TO 110 STEP -1
PAT)&" COMPLETED"
                                       1950 CALL SOUND(-100,SO,O)
|1410 MD=5
                                       1960 NEXT SO
1420 MA=2
                                       1970 FOR NUCD=3 TO 23
1430 GOSUB 2210
                                       1980 CALL HCHAR(NUCD, 2, 32, 30)
1440 MS="BONUS OF "&STRS(PAT*LI*
                                       1990 NEXT NUCD
10)
                                       2050 MS="GAME DVER"
1450 MD=7
                                       2060 MD=9
```

PROGRAM

2070 MA=11 2080 GDSUB 2210 2090 MS="YEUR FINAL SCORE IS "&S TR\$(SC) 2100 MD=11 2110 MA=5 2120 GOSUB 2210 2130 M%="PRESS Y TO PLAY AGAIN" 2140 MD=16 2150 MA=5 2160 GDSUB 2210 2170 CALL KEY(0,K,S) 2180 IF S=0 THEN 2170 2190 IF K=89 THEN 15 ELSE 2200 2200 END 2210 FOR I=1 TO LEN(MS) 2220 CALL HCHAR(MD,MA+I,ASC(SEG) (M\$, I, 1))) 2230 NEXT I 2240 RETURN 2250 CALL CLEAR 2260 CALL SCREEN(2) 2270 FOR COT=1 TO 8 2288 CALL COLOR(COT,16,1) 2290 NEXT COT 2300 PRINT TAB(5); "CATERPILLAR C RAWL":TAB(5):"************* 1111 2310 PRINT "MOVE THE CATERPILLAR AROUND":: "THE MUSHROOM PATCH, WH ILE":: 2320 PRINT "EATING THE LEAVES AN D"::"DODGING THE MUSHROOMS.":: 2330 PRINT "AVOID THE SURROUNDIN G HEDGE, ":: "AND YOUR DWN BODY. ": 2340 PRINT "PRESS ANY KEY TO CON TINUE" 2350 CALL KEY(0,K,S) 2360 IF S=0 THEN 2350 2370 RETURN



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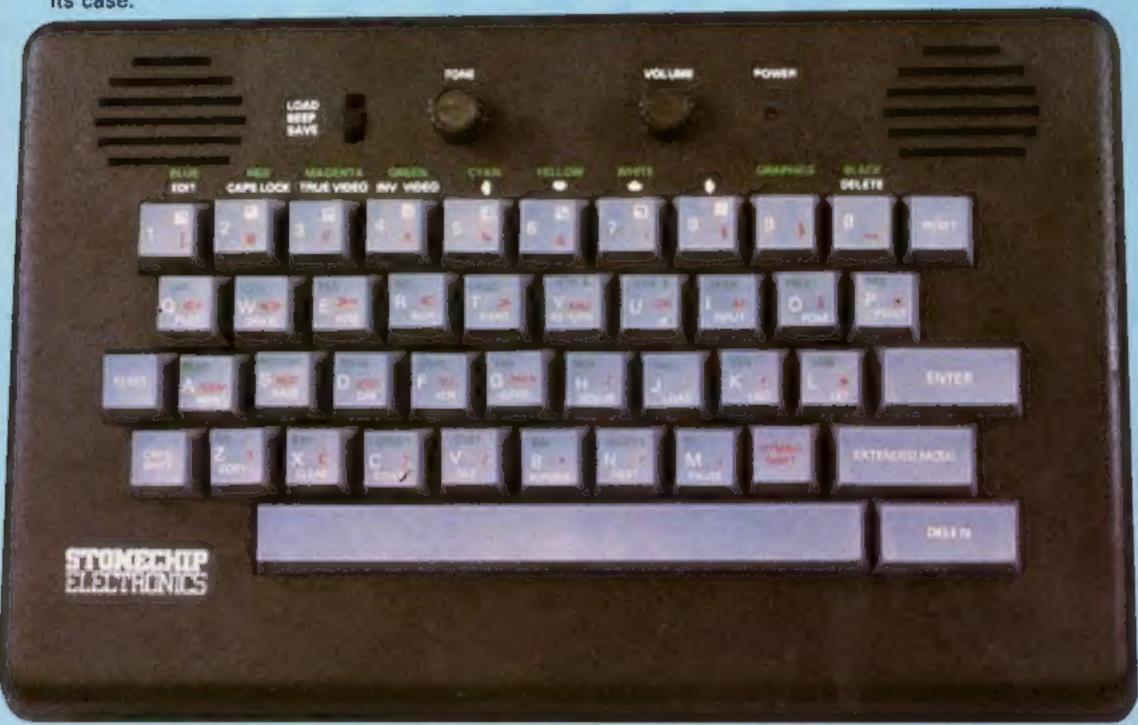
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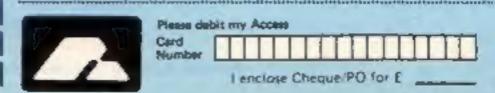
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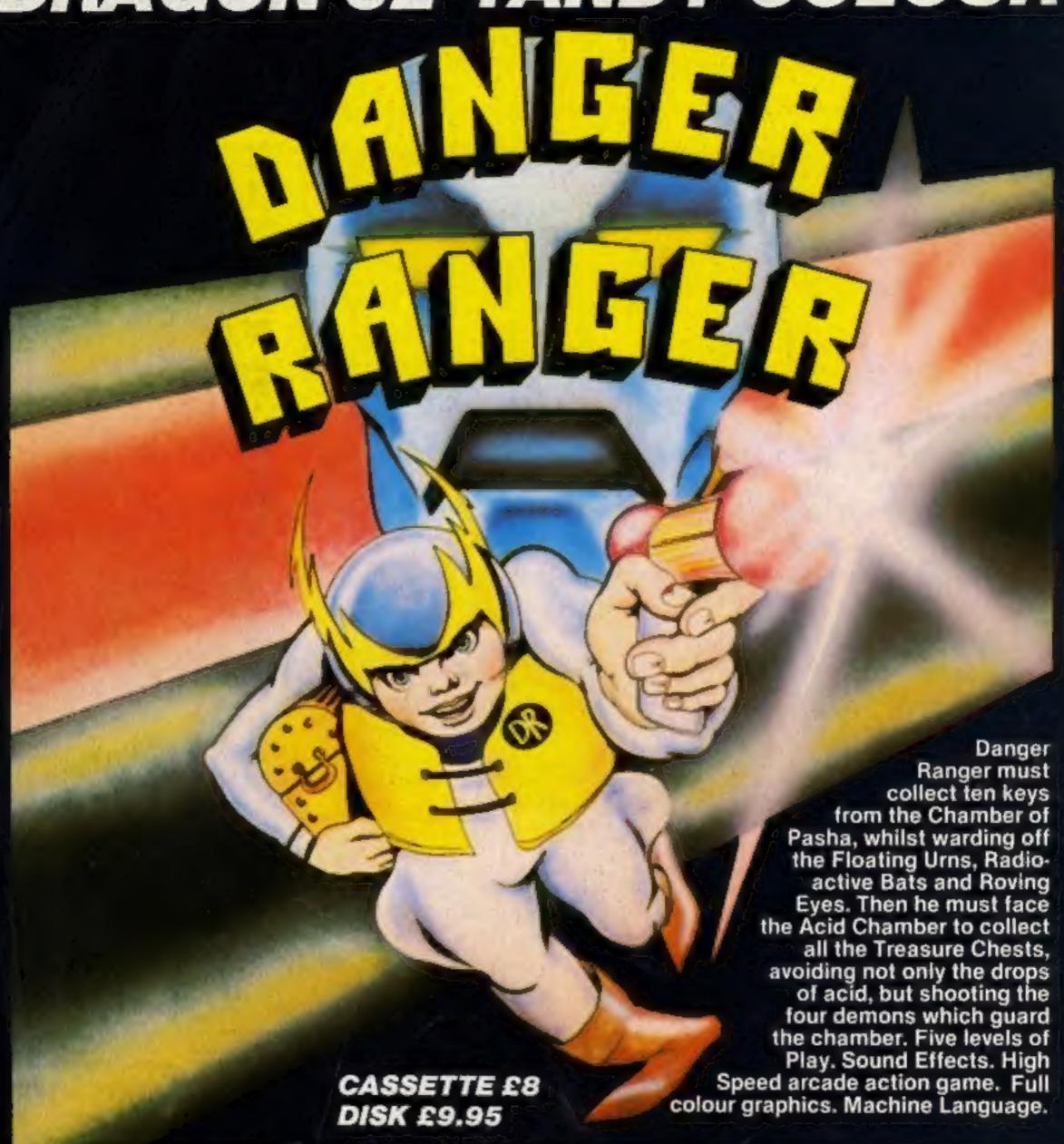
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